Patent Claims

1. Semi-hydrochloride of 8-cyano-1-cyclopropyl-7-(1S,6S-2,8-diazabicyclo-[4.3.0]nonan-8-yl)-6-fluoro-1,4-dihydro-4-oxo-3-quinolinecarboxylic acid.

2. Semi-hydrochloride of 8-cyano-1-cyclopropyl-7-(1S,6S-2,8-diazabicyclo-[4.3.0]nonan-8-yl)-6-fluoro-1,4-dihydro-4-oxo-3-quinolinecarboxylic acid (CCDC semihydrochloride), characterized in that it has an X-ray powder diffractogram with the following reflection signals (2 theta) of high and medium intensity.

2 θ (2 Theta)
5.86
6.90
7.26
8.98
9.35
10.13
10.68
10.97
12.41
13.67
14.57
14.89
15.73
16.07
16.47
16.87
17.78
18.91
19.81
20.04
20.62
20.75
20.93
21.46
21.74
22.92
25.36
25.71
26.98
27.58

28.24
30.61

3. Semi-hydrochloride of 8-cyano-1-cyclopropyl-7-(1S,6S-2,8-diazabicyclo-[4.3.0]nonan-8-yl)-6-fluoro-1,4-dihydro-4-oxo-3-quinolinecarboxylic acid (CCDC semihydrochloride), characterized in that it has an X-ray powder diffractogram with the following reflection signals (2 theta) of high and medium intensity.

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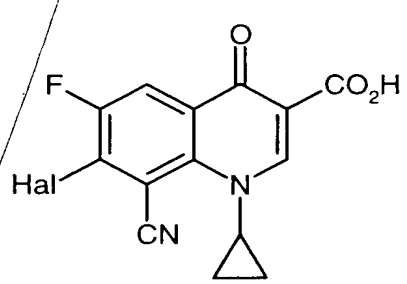
20.62
20.75
20.93
21.46
21.74
22.92
25.36
25.71
26.98
27.58
28.24
30.61

and a melting point, determined by DTA, of from 278°C to 280°C.

4. CCDC semihydrochloride according to Claim 1 or 2, obtainable by reacting 7-halogeno-8-cyano-1-cyclopropyl-6-fluoro-1,4-dihydro-4-oxo-3-quinoline-carboxylic acid of the formula (II)

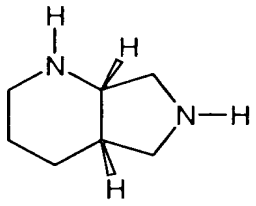


(II),

in which

Hal represents fluorine or chlorine,

and (1S,6S)-2,8-diazabicyclo[4.3.0]nonane of the formula (III)



(III),

if appropriate in the presence of a base, in one of the following diluents or diluent mixtures:

a) aliphatic alcohols having at least four carbon atoms,

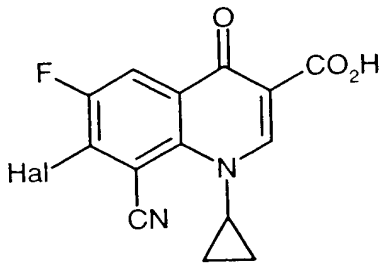
b) mixture of, for example, aliphatic alcohols having at least three carbon atoms with the diluent N-methylpyrrolidone,

c) mixture of propanol and N,N-dimethylformamide,

or

d) mixture of ethanol with N-methyl-pyrrolidone with added tripropylamine, tributylamine, N-ethylmorpholine, N-propyl-morpholine and/or N-butylmorpholine base.

5. Process for preparing CCDC semihydrochloride according to any of Claims 1 to 4, characterized in that 7-halogeno-8-cyano-1-cyclopropyl-6-fluoro-1,4-dihydro-4-oxo-3-quinolinecarboxylic acid of the formula (II)

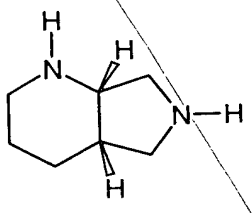


(II),

in which

Hal represents fluorine or represents chlorine

and (1S,6S)-2,8-diazabicyclo[4.3.0]nonane of the formula (III)



(III)

are reacted in the presence of a base in one of the following diluents or diluent mixtures:

a) aliphatic alcohols having at least four carbon atoms,

b) mixture of, for example, aliphatic alcohols having at least three carbon atoms with the diluent N-methylpyrrolidone,

c) mixture of propanol and N,N-dimethylformamide,

or

d) mixture of ethanol with N-methyl-pyrrolidone with added tripropylamine, tributylamine, N-ethylmorpholine, N-propyl-morpholine and/or N-butylmorpholine base.

6. Process for preparing CCDC semihydrochloride according to Claim 5, characterized in that the diluent used is an aliphatic alcohol having at least 4 carbon atoms or that an aliphatic alcohol having at least two carbon atoms is used as component of a diluent mixture.

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7. Process for preparing CCDC semihydrochloride according to Claim 5, characterized in that, if an aliphatic alcohol having at least 3 carbon atoms is used as component of a diluent mixture, N-methyl-pyrrolidone is simultaneously employed as a further diluent in a ratio of from 1 to 1 to 3 to 1.

8. Process for preparing CCDC semihydrochloride according to Claim 6, characterized in that, if propanol is used as component of a diluent mixture, N,N-dimethylformamide is simultaneously employed as further diluent in a ratio of from 1 to 1 to 3 to 1.

9. Medicament, characterized in that it comprises, in addition to customary auxiliaries and excipients, CCDC semihydrochloride according to any of Claims 1 to 4.

10. Use of CCDC semihydrochloride according to any of Claims 1 to 4 for preparing medicaments.

11. Use of CCDC semihydrochloride according to any of Claims 1 to 4 in antibacterial compositions.